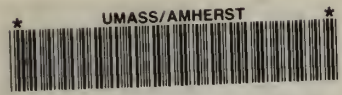


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OPTION PAPER: FAMILY POLICY AND TAXATION OF INCOMES

By

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January 1989

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Cynthia Mann wrote a preliminary draft of this report. Estimates using 1987 CPS data are contained in a report "The Income Taxation of the Family" by Andrew Reschovsky written for the Special Commission on Tax Reform (August 1988). This paper relies on the analysis and issues discussed in Who pays Massachusetts' Taxes? The Personal Income Tax by Andrew Reschovsky, Second Interim Report of the Special Commission on Tax Reform, 1986 and The Massachusetts Personal Income Tax by Richard Tresch, Third Interim Report of the Special Commission on Tax Reform, 1986. In addition, the author acknowledges the contributions by the staff of the Special Commission on Tax Reform: Sandra Quinn, Esq., Kevin Daly, Helen Pelzman, and Mona Cosmos.

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FAMILY POLICY AND THE TAXATION OF INCOMES

I. INTRODUCTION

Federal Tax Reform in 1986 was heralded for its adjustments in the personal income tax, including lower tax rates and a broader tax base. Provisions which reflect changes in the United States family structure, modern labor force patterns and tax burdens on the poor were also added. A head of household standard deduction was added, the Earned Income Tax Credit (EITC) was increased, and the standard deductions and personal exemptions were boosted. The changes removed many of the poor from tax rolls and allowed single parents the largest tax reduction among all family types.¹

Many states, partly because of their close links with the Internal Revenue Code (Code) and partly because of concerted tax reform efforts, are also instituting major changes in their income tax systems.² However, the recent linking of the Massachusetts personal income tax with the federal Code has not introduced the federal features that adjust for family composition and income. In Massachusetts, the levels of personal exemptions, various deductions, credits, and the "no-tax" status continue to be determined independent of the Code.

While the Massachusetts personal income tax system has not been revamped, as was the Code, there have been several changes

¹ Daniel H. Weinberg, "The Distributional Implications of the Tax Reform Act of 1986." Focus, University of Wisconsin-Madison, Institute for Research on Poverty, Vol. 10, No. 3, Fall 1987, Table 2, p. 14.

² Steven Gold reports that by the end of 1987, 27 of the 40 states with personal income taxes had enacted major reforms. See The Budding Revolution in State Income Taxes. National Conference of State Legislatures, Legislative Finance Paper #61, December 1987.

in recent years. Legislation passed in 1986 lowered effective tax rates by repealing the 7.5% surcharge. At the same time, the Commonwealth increased the "no-tax" status threshold from \$6,000 for single filers and \$10,000 for joint filers to \$8,000 and \$12,000, respectively. Also, the Legislature increased personal exemptions for dependents from \$700 to \$1000 and allowed \$2,200 in exemptions for spouses filing jointly regardless of employment status.³ These measures have brought about significant tax relief, particularly, for low-income families.⁴

Massachusetts advances a policy of equitable income tax liabilities and protection for low income families and, in many respects, is a leader among states in this area.⁵ Yet, the Commonwealth's tax policy generally does not take into account the significant evolution in the family structure.⁶ As a result, the Commonwealth's own policy of providing relief from income taxation for some families is not being fully realized. This generates inequities both vertically (i.e., across income categories) and horizontally (i.e., among filing units with the

³ Chapter 488 of the Acts of 1986.

⁴ Because of increases in the threshold for "no-tax" status, 315,000 low-income families have been removed from the tax rolls. House 1, Vol. 1, FY89, Summary, p.8.

⁵ Of the 40 states and the District of Columbia which utilize a general income tax, Massachusetts has the 28th highest tax threshold for two-parent families of four in 1988. (Center for Budget and Policy Priorities, Washington, D.C.)

⁶ This paper addresses some of the implicit family policies embedded in the income tax system by focusing on families with dependents (of all ages). The treatment of people over 65 will not be the primary concern of this paper. Tax treatment of retirement income, which has been included in the Commission's discussion on tax expenditures and the treatment of unearned income, a topic for further consideration by the Commission, will address personal income taxation of the elderly.

same income)⁷.

This paper presents three options designed to achieve greater fairness within the personal income tax. The first option relates to the rise of single-headed households and their income tax treatment. A small but significant portion of filing units now considered "single" filers by the tax code are heads of household with one or more dependents. Hence, a personal exemption adjusted to a head of household status would create horizontal equity among all filing units regardless of family size.

The second option is to adjust the "no-tax" status threshold for family size and index it to inflation. The current thresholds protect low-income families with no dependents from taxation, but does not adequately protect families with several dependents or single heads of household with dependents. The lack of regular adjustments to the "no-tax" status for inflation has meant that families at or below poverty level incomes face positive income tax liabilities during inflationary periods.

The third option is to eliminate the child care deduction and replace it with a refundable dependent care credit. This is particularly important because of the steady increase in the number of women of child-bearing and child-rearing ages in the labor force. While the Commonwealth allows such families to deduct work-related expenses, the current deduction primarily benefits high income families leading to considerable vertical inequalities in the tax code.

The reforms suggested here will result in relatively minor changes in tax liabilities overall. This is because such changes largely affect those taxpayers with modest liability, and therefore, have a relatively small impact. This is not to diminish the importance of these proposals. Even a small income tax liability for a very low-income parent struggling to support

⁷ All single individuals or married couples who are not dependents of another taxpayer are defined as a "filing unit." All filing units are considered potential taxpayers.

a family is inconsistent with the state's efforts to encourage the employment of single and two-parent families. With a few relatively minor adjustments that burden can effectively be eliminated.⁸ Hardship can be avoided while tax policy goals of horizontal and vertical equity are served.

II. TREATMENT OF HEADS OF HOUSEHOLD: PERSONAL EXEMPTIONS

A. The Rise in Single Head of Household Families

The increase in the number of families with a single head of household over the past two decades requires reform of the Massachusetts code with respect to its treatment of the single filer. The vast majority of head of household families are headed by women.⁹ In 1970, 12.8% of all Massachusetts families with children under 18 were headed by females. By 1980, that percentage grew to 17.5% and in 1987 it was 23%.¹⁰

Not only are there many more families headed by single

⁸ Data on tax burden on low income families in Massachusetts are difficult to obtain. Department of Revenue (DOR) data are based on tax returns which report adjusted gross income (AGI) for families that file tax returns. This distorts data on poor families for two reasons: AGI excludes money income from the government in the form of Social Security, Supplemental Security Income (SSI) and Aid to Families with Dependent Children (AFDC), and many families who fall below the "no-tax" status do not file returns. Annual data on Massachusetts extracted from Current Population Survey collected by the Census Bureau exists and are the best source for information on low income families.

⁹ U.S. Census 1986 data indicate that over 86% of all single-headed households with children under 18 are female-headed.

¹⁰ Data for 1970 and 1980 from the decennial census. 1970, Census of the Population, General Population Characteristics, part 23 PC70-1-B-59, June 1973. 1980, Census of the Population. General Social and Economic Characteristics, part 23 Massachusetts PC80-1-C-23, June 1983. Data from 1987 come from Reschovsky, Massachusetts sample of March 1987 Current Population Survey.

women, these families are more likely to be poor than other families. A 1986 Massachusetts Division of Employment Security and Center for Labor Market Studies report on poverty reveals the extent to which the ranks of those whose income is below the federal poverty level are disproportionately composed of women and their children.¹¹ In 1987, a family with dependents under age 18 headed by a single woman was eighteen times more likely to be poor than a two-parent family with dependents under age 18.¹²

Head of household families represent 6.4% of all Massachusetts filing units in 1988. The Internal Revenue Service (IRS) defines heads of household as single taxpayers maintaining a home for over half the year for a child, grandchild, or any dependent; or separated taxpayers maintaining a home for a dependent child. Despite the significantly greater incidence of poverty among female-headed households, hence among single-headed households, these households generally bear relatively higher tax burdens than all households for most income ranges. Table 1 on the following page shows the percent of all and head of household units, their average tax liability and average tax burden (i.e., tax liability as a percentage of total income) by total income in 1988. This table shows that the tax burden on head of household families exceeds that of all filers at all but two income ranges. Head of household filers in the income levels above \$5,000 and below \$15,000, which represents 28% of head of household filers,

¹¹ From 1970 to 1985, the percentage of persons in poor families headed by single women increased from 42.9% to 67.8%. Andrew Sum, "The Shrinking of Family Poverty in Massachusetts: New Challenges for Opportunity," Division of Employment Security, May, 1986, p. 20.

¹² Reschovsky, Massachusetts sample of March 1987 Current Population Survey. The so-called "feminization of poverty" results both from the increase in female-headed households and from the widening disparity in poverty rates between two-parent and single parent households. The decline in real wages since the early 1970s has meant that two incomes are often necessary to bring a family's income above the poverty standard, and thus two-earner families are more likely to secure a family income above the poverty threshold.

Table 1

Percent of Filing Units,
Average Personal Income Tax Liabilities and Tax Burdens
for all Massachusetts Residents and Head of Household (HoH)
Filing Units, 1988
(Includes all filers)

| Total Income | Percent of Filing Units | | Average Tax Liability | | Average Tax Burden | |
|-------------------|----------------------------|---------------|--------------------------|---------------|-----------------------|---------------|
| | Total Filers | HoH Filers | Total Filers | HoH Filers | Total Filers | HoH Filers |
| Less than \$5,000 | 5.8 % | 3.9 % | \$ 0 | \$ 0 | 0.0 % | 0.0 % |
| \$ 5,000 - 9,999 | 13.0 | 12.9 | 15 | 31 | 0.2 | 0.3 |
| \$10,000 - 14,999 | 11.3 | 15.3 | 219 | 269 | 1.7 | 2.1 |
| \$15,000 - 19,999 | 10.3 | 9.6 | 455 | 494 | 2.6 | 2.7 |
| \$20,000 - 24,999 | 9.6 | 19.0 | 693 | 697 | 3.1 | 3.1 |
| \$25,000 - 29,999 | 7.7 | 13.7 | 934 | 1,031 | 3.4 | 3.7 |
| \$30,000 - 34,999 | 6.7 | 7.1 | 1,160 | 1,273 | 3.6 | 3.9 |
| \$35,000 - 39,999 | 5.6 | 7.5 | 1,432 | 1,552 | 3.8 | 4.1 |
| \$40,000 - 44,999 | 5.1 | 3.2 | 1,662 | 1,819 | 3.9 | 4.4 |
| \$45,000 - 49,999 | 4.2 | 2.5 | 1,942 | 1,994 | 4.1 | 4.2 |
| \$50,000 - 74,999 | 12.4 | 4.1 | 2,570 | 2,519 | 4.3 | 4.3 |
| \$75,000 and over | 8.2 | 1.0 | 5,911 | 6,012 | 4.7 | 6.0 |
| TOTAL | 100.0% | 100.0% | \$1,341 | \$ 847 | 2.8 % | 2.8 % |

Source: Andrew Reschovsky, Massachusetts Income Tax Simulation Model with data from the March 1987 Current Population Survey

have particularly high average tax liabilities relative to all filers. Head of household filing units with income between \$5,000 and \$9,999 face a tax burden that is 50% greater than all filers and have a 23.5% higher burden than that of all filing units in the \$10,000 to \$14,999 income range.

One reason for the higher tax burdens for head of household units in low income ranges is that 45% of all filers with total income below \$15,000 are 65 years and older and much of their income, such as Social Security, is not subject to taxation.¹³

¹³ An average of 31% of total income for filers 65 years and older was subject to taxation compared to an average of 85% for non-elderly filers in 1986. The percentage was 11% for elderly filers and 60% for non-elderly filers with income between \$5,000 and \$9,999. Andrew Reschovsky, 1987. Who Pays Massachusetts' Taxes? The Personal Income Tax. Second Interim Report of the Special Commission on Tax Reform, House No. 5149, Table 23, p. 75.

Elderly filers also receive an additional \$700 exemption. The public policy decision reflected by these two tax preferences goes beyond the scope of this paper which examines tax treatment of the family unit according to size, marital status of the filer, and income. The second reason for the higher tax burden on head of household families, particularly at lower income ranges, is that joint filers receive higher exemptions for families of the same size.¹⁴ A solution for this horizontal inequity is proposed by the following.

B. Option for Reform: Creating a "Head of Household" Personal Exemption of \$3,400.

Since 1987 single filers have been allowed a \$2,200 personal exemption, joint filers a \$4,400 personal exemption, and a \$1,000 exemption for each dependent. Personal exemptions were originally designed to identify the amount of money needed for subsistence.¹⁵ While nowhere near the levels necessary to shield a minimum amount of money needed for subsistence, at least as measured by the poverty level, personal exemptions afford all filing units some amount of taxable income which is protected from personal income taxation.¹⁶

The dependent exemption is used to take into account the

¹⁴ Additionally, joint filers are exempt from personal income taxation at a 50% higher level of AGI than are head of household families. Adjusting the "no-tax" status for family size will be addressed in section III as it presents a set of concerns for all families, not just single-headed households.

¹⁵ House 1, Vol. 4, FY89, Tax Expenditures, p.3. See also, Richard Tresch, 1986. The Massachusetts Income Tax, Third Interim Report of the Special Commission on Tax Reform, House No. 6443, p. 19 and Eugene Steuerle, "Tax Treatment of Households of Different Size," Taxing the Family ed. by Rudolph G. Penner, American Enterprise Institute, 1983 pp. 73-91. Moreover, because personal exemptions merely help define the tax base they are not classified as tax subsidies or "expenditures."

¹⁶ For example, the average poverty level for a single person in 1988 is \$5,778 and for a family of two is \$7,397.

fact that expenses increase with family size. For example, a childless couple with a combined income of \$25,000 receives fewer exemptions (\$4,400) than a couple whose income is also \$25,000, but who has three children to support (\$7,400 in exemptions). Single parents who are heads of household are entitled to the personal exemption allowed to single filers, \$2,200 plus the dependent exemption. Thus, under current law, single parents are treated like single individuals and are entitled to fewer personal exemptions than two-parent households of equal size. For example, a family of three comprised of a joint filer with one child receives \$5,400 worth of exemptions, while a family of three comprised of a single head of household and two children receives \$4,200 worth of exemptions. If these families had identical incomes and deductions, the single head of household would face a tax liability on earned income that is \$60 more than the joint filing family of the same size.

Household expenses for a head of household are comparable to those of a married couple with the same size. In fact, according to a survey conducted by the Bureau of Labor Statistics and cited by the National Women's Law Center and the Women's Equity Action League in their testimony before Congress, the budget for a family headed by a single parent is often greater than the budget for the same size family headed by a married couple.¹⁷ Additionally, the Census Bureau applies a higher poverty level threshold for a single headed family than a joint couple family

¹⁷ See statement of Nancy Duff Campbell, National Women's Law Center, and Maxine Forman, Women's Equity Action League, in "Tax Fairness for Women," submitted to the Committee on Finance, United States Senate, June 19, 1985; Testimony of Paul Moss, President, Parents Without Partners, Inc., June 6, 1985; Testimony of Mary Burdette, Director of Governmental Affairs, Children's Defense Fund, before the Subcommittee on Select Revenue Measures, Committee on Ways and Means, U.S. House of Representatives, June 6, 1985; and Testimony of Frederick C. Hutchinson, on behalf of Bread for the World, before the Subcommittee on Select Revenue Measures, Committee on Ways and Means, U.S. House of Representative, June 6, 1985.

of the same size.¹⁸

The federal government, the District of Columbia and 23 states treat heads of household more favorably than single filers by either allowing a higher personal exemption, a higher standard deduction, higher credits or by applying differential tax rates.¹⁹ The 1986 Tax Reform Act revised the federal standard deduction with respect to household status as illustrated in Table 2.

Dr. Andrew Reschovsky estimates there are 182,330 head of household filing units in Massachusetts, 81.6% of these face positive tax liabilities.²⁰ Increasing the personal exemption for heads of household to \$3,400 from its current \$2,200 level

Table 2

Federal Standard Deduction by Family Size, 1987 and 1988

| Filing Status | 1987 | 1988* |
|---------------------------|-------|-------|
| Joint return filers | 3,760 | 5,000 |
| Married filing separately | 1,880 | 2,500 |
| Head of household filers | 2,540 | 4,400 |
| Single filers | 2,540 | 3,000 |

* The federal standard deduction will be adjusted for inflation for tax years beginning after 1988.

¹⁸ See Table 5 on page 14 of this paper for 1987 poverty level thresholds by family size and composition.

¹⁹ Ten states and the District of Columbia allow for a head of household exemption or standard deduction that is more than that of the single filer (seven states in fact allow equal treatment with joint filers): Alabama, Arizona, Georgia, Kansas, Louisiana, Mississippi, Missouri, New Mexico, North Carolina, and North Dakota. California, Iowa, and Arkansas allow a credit for heads of household that is equal to that of joint filers. Eight states allow heads of household to apply tax rates that are more favorable than for single filers: Hawaii, Maine, Minnesota, Nebraska, New York, Oklahoma, Oregon, and Utah. Two states adopt the federal provisions for head of household by taxing a percentage of the federal tax liability, Rhode Island and Vermont.

²⁰ The percent of all filing units with positive tax liabilities is 74.2%.

would assure identical treatment for families of the same size irrespective of the marital status of the filing unit. With the new exemption level, for example, a family of three (all under age 65) will be allowed \$5,400 for personal and dependent exemptions. Computed for joint filers this would be \$4,400 + \$1000 and for a head of household filer this would be \$3,400 + \$2,000.

Table 3 on the following page illustrates the impact on tax burdens by increasing the personal exemption for heads of households to \$3,400. The average tax burden for head of household filing units would decrease by 5.4%. Reschovsky has estimated the total cost of this proposal to be \$8.4 million.²¹ This represents a reduction of about 0.2% of the total income tax revenue collections in FY88. With a new exemption level of \$3,400, tax burdens for heads of household approach those of all units. The increased exemption provides more equity and parallels treatment by the federal government and the majority of states with income tax. The percent reduction in tax burden is greatest for head of household filing units in income ranges above \$5,000 and below \$25,000. Yet the average tax liabilities for head of household filers as compared to all filers is still large for low income units between \$5,000 and \$15,000 of money income. The following section suggests reform of the "no-tax" status to achieve these adjustments at lower income ranges.

²¹ According to the most recent data supplied by DOR, there were 187,964 head of household filers in 1986, representing 6.6% of all filers. Of these, 28,595 have incomes below the \$8,000 no-tax status limit, leaving 159,369 who could claim the personal exemption. If the personal exemption had been raised to \$3,400, the cost would have been \$10 million in 1986.

Table 3

Average Personal Income Tax Liabilities and Tax Burdens and
Percent Reduction of Tax Burden with a
\$3,400 Personal Income Tax Exemption for
All Head of Household Filing Units, 1988

| Total Income | Average Tax Liability | Average Tax Burden | Percent Reduction in Tax Burden |
|-------------------|-----------------------------|--------------------------|--|
| Less than \$5,000 | \$ 0 | 0.0 % | 0.0 % |
| \$ 5,000 - 9,999 | 28 | 0.3 | 9.7 |
| \$10,000 - 14,999 | 225 | 1.7 | 16.4 |
| \$15,000 - 19,999 | 445 | 2.5 | 9.9 |
| \$20,000 - 24,999 | 623 | 2.8 | 10.6 |
| \$25,000 - 29,999 | 971 | 3.5 | 5.9 |
| \$30,000 - 34,999 | 1,213 | 3.7 | 4.9 |
| \$35,000 - 39,999 | 1,492 | 4.0 | 3.9 |
| \$40,000 - 44,999 | 1,759 | 4.2 | 3.4 |
| \$45,000 - 49,999 | 1,934 | 4.1 | 3.1 |
| \$50,000 - 74,999 | 2,459 | 4.2 | 2.6 |
| \$75,000 and over | 5,952 | 6.0 | 1.0 |
| TOTAL | \$ 801 | 2.6 % | 5.4 % |

Source: Andrew Reschovsky, Massachusetts Income Tax Simulation Model
with data from the March 1987 Current Population Survey

III. THE "NO-TAX" STATUS AND LIMITED INCOME TAX REDUCTION CREDIT

A. Low Income Protection

The Massachusetts income tax includes a provision establishing an income level, based on AGI, below which no tax is paid. "No-tax" status (NTS) was introduced into the tax code in 1971, although Massachusetts has always had some mechanism for limiting the tax liability of low income families.²² Effective 1987, the NTS threshold is set at \$12,000 for married couples

²² This provision of the personal income tax system became Mass. Gen. Laws ch. 62, § 5, Chapter 555 of the Acts of 1971.

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filing jointly and \$8,000 for all other individuals and families. The NTS has been raised four times from its original levels of \$3,000 for single filers and \$5,000 for joint filers established in 1971. All four changes have been initiated since 1983.²³

In 1986, the NTS provision was amended to include the "limited income tax reduction credit" (LITRC). The LITRC strengthened the protections of the NTS by prohibiting tax liabilities on AGI above the NTS threshold from exceeding 10%. For example, the maximum tax liability that a joint-filing unit with an AGI of \$14,000 could face is \$200 (10% of \$2,000). The provision effectively reduces the tax rate on low and moderate income filing units and it avoids tax treatment that might deter individuals from entering the work force.²⁴ Eligibility for the LITRC is based on the thresholds for NTS.

Although the current NTS thresholds are relatively generous as compared to that of other states, several inequities exist. First, families of the same size are treated dissimilarly based on whether the family is headed by a single parent or a married couple. This results in families of the same size applying different NTS. Second, because the NTS is not adjusted to family size, families of widely varying sizes apply the same NTS threshold. Finally, since the NTS threshold is not indexed to reflect changes in the cost of living, the real value of the NTS is eroded with inflation which has resulted in significant taxation of families with income below the poverty level in the past.

²³ In 1984 the levels applied increased to \$3,600 and \$6,100, in 1985 they became \$4,400 and \$7,200, in 1986 the NTS applied was \$6,000 and \$10,000.

²⁴ The LITRC is consistent with labor market and welfare policies that encourage low-income persons to enter the labor force. The provision enhances neutrality in the income tax code in that additional income from work-related activities will be taxed at only twice the marginal rate (10%) than for other higher income filers. A considerably higher marginal tax rate would result without the LITRC which might discourage low income persons from entering the work force.

Currently, a little over one-quarter of all filing units in the Commonwealth are eligible for NTS. The inequitable distribution of the NTS is illustrated by Table 4 below. In comparing the two categories of unmarried taxpayers with incomes between \$5,000 and \$9,999, 62% of single taxpayers with no dependents are eligible for the NTS. On the other hand, only 56% of head of household taxpayers are eligible. Of joint filers in this income category, 100% are eligible for the NTS whether or not they have dependents.

Because the NTS, hence the LITRC,²⁵ is not adjusted for family size, larger families are left with tax liabilities while

Table 4

Distribution of Filing Units Eligible for "No-Tax" Status
By Filing Status, Adjusted Gross Income, and Total Income
Massachusetts Residents, 1988 Number of
Eligible Filing Units and (Percent of Total)

| Adjusted Gross Income | Filing Status | | Head of Household |
|-----------------------|---------------|---------------|-------------------|
| | Single | Joint | |
| Less than \$5,000 | 408,120 (100) | 107,980 (100) | 17,910 (100) |
| \$5,000-9,999 | 108,530 (62) | 60,370 (100) | 13,510 (56) |
| \$10,000-14,999 | 0 (0) | 13,950 (26) | 0 (0) |
| TOTAL | 516,640 (37) | 182,300 (15) | 31,420 (17) |
| <u>Total Income</u> | | | |
| Less than \$5,000 | 139,510 (100) | 17,510 (100) | 7,070 (100) |
| \$ 5,000- 9,999 | 272,160 (86) | 27,570 (100) | 16,840 (71) |
| \$10,000-14,999 | 77,070 (34) | 50,440 (79) | 4,400 (16) |
| \$15,000-19,999 | 16,350 (8) | 46,160 (61) | 1,050 (6) |
| \$20,000 and over | 11,560 (2) | 40,630 (4) | 2,070 (2) |
| TOTAL | 516,640 (37) | 182,300 (15) | 31,420 (17) |

Source: Massachusetts Income Tax Simulation Model with data from the March 1987 Current Population Survey.

²⁵ The inequities in the present eligibility for LITRC as a result of not adjusting NTS for family size is illustrated in Table A.1 in Appendix A.

smaller families with the same per capita income are protected. For example, a joint filing unit with no children is eligible for NTS status when its AGI is \$12,000 (or a per capita AGI of \$6,000) while a joint filing unit with three children with an AGI of \$15,000 (a per capita AGI of \$3,000) is not. Moreover, a single filing unit has the same NTS threshold as a head of household with children. Finally, because the NTS is dependent upon marital status, the \$8,000 NTS threshold is applicable to a single mother with four children, while a married couple with no dependents can qualify for NTS if its AGI is below \$12,000. As a result many low-income families are not eligible for NTS and the relationship of the NTS to the federal poverty level is obscured.

As indicated in Table 5 below, a family of three comprised of a head of household and two children can have an AGI that is over 12% below the federal poverty line and not be eligible for NTS while a family of three comprised of a couple filing jointly can have an AGI of up to 131% of the poverty level and be eligible for NTS. Under the current system, single parents and those married couples with large families can face positive tax

Table 5

"No-Tax" Status as a Percent of the Poverty Level
By Household Type (HH), 1987

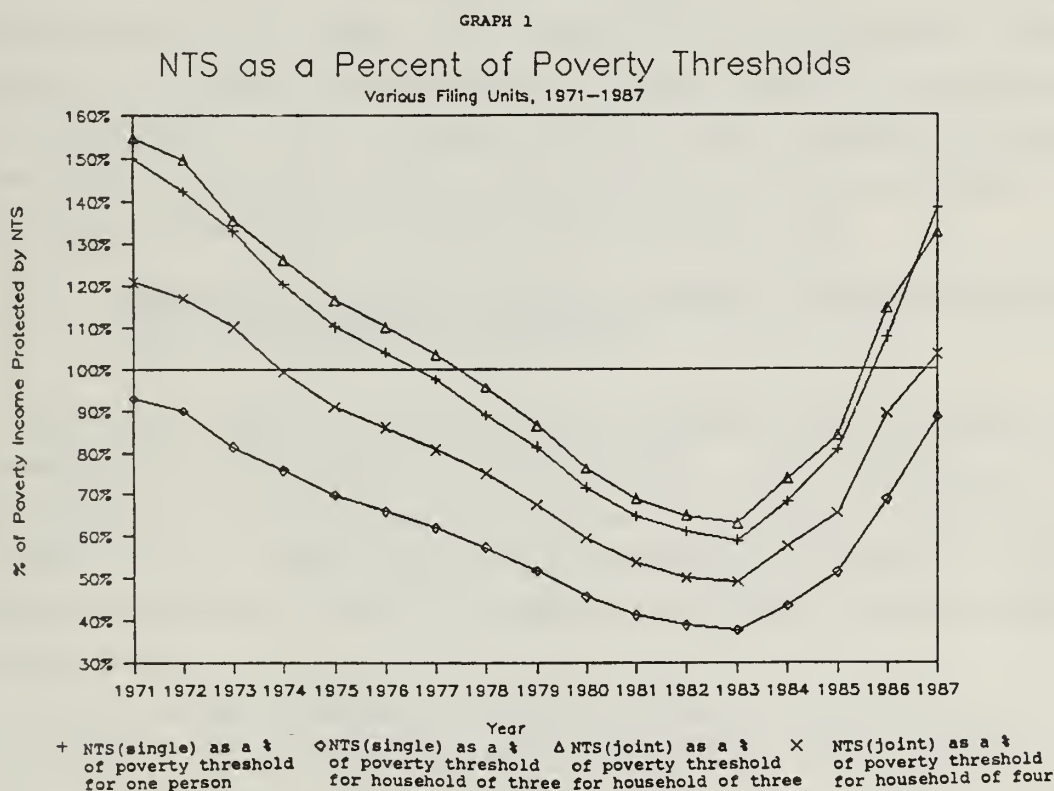
| HH Size | HH Type | 1987 Poverty Level | 1987 NTS | % of Poverty Level Income Protected by NTS |
|------------|-------------------------------------|--------------------------|-------------|---|
| 1 | Single, no dependents (under 65) | \$5,909 | \$8,000 | 135.4 |
| 1 | Single, no dependents (65 and over) | 5,447 | 8,000 | 146.9 |
| 2 | Head of household, 1 dependent | 7,829 | 8,000 | 102.2 |
| 2 | Married couple, no dependents | 7,606 | 12,000 | 157.8 |
| 3 | Head of household, 2 dependents | 9,151 | 8,000 | 87.4 |
| 3 | Married couple, 1 dependent | 9,142 | 12,000 | 131.3 |
| 4 | Head of household, 3 dependents | 11,559 | 8,000 | 69.2 |
| 4 | Married couple, 2 dependents | 11,519 | 12,000 | 104.2 |

Source: Information obtained from the Census Bureau.

liabilities even though their income is near or at the federal poverty level.²⁶

Poverty level thresholds are officially adjusted for inflation every year. Yet because the NTS is fixed by statute, the NTS thresholds do not respond automatically to inflation. The result is that the NTS has not consistently protected filing units below the poverty level from taxation.²⁷

Graph 1 below depicts the NTS as a percent of poverty thresholds for families of various sizes and filing status for the years 1971-1987. Despite generous increases in NTS in recent



²⁶ For example in 1988, 4.4% of the Commonwealth's families with incomes below the poverty line and 24.8% of those families with income of 100-150% of the poverty level had positive income tax liabilities.

²⁷ See Table A.2 in the appendix for average poverty levels for families of one, three, and four 1971-1987 as compared to NTS.

years, less income as a percent of poverty threshold is protected by the NTS today than it was in 1971 for each filing status and family size. For a single-unit household, the NTS was set below the poverty level from 1977 until 1986. For a couple with two children, the NTS threshold was below the poverty threshold from 1974 until 1987. A single mother with two children has never benefited from a NTS that is above her family's poverty threshold and in 1983 the NTS protected less than 40% of poverty threshold income.

In sum, the actual tax payments for low-income families who are not protected by the NTS are not large in absolute terms, in part because of the LITRC, yet significant inequalities exist. Furthermore, as has been the case in the past, the intention of the NTS to protect low income families from taxation is severely compromised as poverty level thresholds which are adjusted for inflation surpass those of the NTS which are not.

B. Option for Reform: Adjust "No-Tax" Status to Family Size and Index to Inflation

The first part of the proposal presented here establishes an adjusted NTS which varies by family size. The second part suggests that the NTS base be allowed to increase with changes in the price level. The adjusted NTS thresholds would, in turn, establish different levels of LITRC for filing units of different sizes as well.

On the federal level, since the 1986 Tax Reform Act, the tax threshold for heads of household and the NTS income limits correspond to family size. Prior to 1986, the federal NTS limit for single-parent households was gauged to single individuals as it now is in Massachusetts. The change at the federal level recognizes that heads of household with dependents have costs that equal or in many cases exceed the costs faced by those

filing jointly without dependents.²⁸ As a result, the 1986 federal changes raised the NTS threshold for heads of household with two and four dependents by 57% and 63%, respectively.²⁹ (See Table A.3 in the Appendix for federal tax exempt levels.)

The option presented here would allow joint and head of household filers to apply a NTS threshold to an AGI at or below \$7,600 plus their personal and dependent exemptions.³⁰ This level would preserve the current minimum level of \$12,000 NTS for joint filers with no dependents ($\$7,600 + \$4,400 = \$12,000$). With an NTS adjusted as above, a family of three would have the same NTS threshold regardless of composition. A couple with one child has NTS with an AGI at or below \$13,000 ($\$7,600 + \$4,400 + \$1,000$) as does a single mother with two children ($\$7,600 + \$3,400 + \$2,000$). Filers would be eligible for the LITRC for income tax liabilities that exceed 10% of their AGI above the NTS adjusted for family size.

Adjusting NTS for family size in this way increases the percentage of filing units eligible for NTS slightly from 26% to 27% and increases the percentage of filing units eligible for the LITRC from 8.7% to 9.1%. The total cost of this option is \$13.6 million. The cost represents a decrease of 0.33% in total income tax collections in FY88.

Table 6 on the following page shows the impact of this proposal on the numbers of filing units by family size eligible for NTS currently and with the proposed adjustment for family size. Over two-thirds of the new filing units eligible for NTS would be heads of household and the number of eligible two-

²⁸ Eugene Steuerle, Paul Wilson. "The Taxation of Poor and Lower Income Workers," Clearinghouse Review, Vol. 21, No. 9, February 1988.

²⁹ Ibid, p. 1052.

³⁰ This proposal assumes an \$3,400 personal exemption for heads of household, as suggested in the previous option. The AGI threshold applied to single filers without dependents in determining the base level of NTS would not change.

Table 6

Filing Units Eligible for NTS Currently
and with Family Adjustment
Massachusetts Residents, 1988

| Filing Unit Type | Total | Current Eligible for NTS | Current Percent Eligible | Adjusted Eligible for NTS | Adjusted Percent Eligible |
|---|-----------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|
| Single | 1,415,180 | 516,640 | 37 % | 516,020 | 37 % |
| Head of household | 182,320 | 31,420 | 17 | 52,770 | 29 |
| Couples with no dependents under 18: | | | | | |
| Zero or single earners | 328,080 | 150,060 | 46 | 152,340 | 46 |
| Two earners | 343,730 | 9,540 | 3 | 9,540 | 3 |
| Couples with dependents under 18: | | | | | |
| Zero or single earners | 170,990 | 19,820 | 12 | 23,850 | 14 |
| Two earners | 394,980 | 2,880 | 1 | 5,820 | 1.5 |
| TOTAL | 2,635,470 | 730,370 | 26 % | 760,950 | 27 % |

Source: Massachusetts Income Tax Simulation Model with data from the March 1987 Current Population Survey.

earner families with children would double.³¹ For 1987, adjusting NTS to family size will protect up to about 120% of poverty level income for a family of four regardless of the marital status of the filing unit. The proposal preserves the current rationale for the NTS while providing more equity for low-income, two-parent families where both parents work and for head of household families.

As Table 7 on the following page shows, adjusting the NTS to family size substantially reduces tax burdens on head of household families with incomes between \$5,000 and \$14,999. This proposal, together with the proposal to create a \$3,400 head of household exemption, virtually eliminates the horizontal inequity that currently exists in the tax code among family types.

³¹ Tables A.4 and A.5 in the Appendix illustrate the impact of the proposal on NTS and LITRC by income class.

Table 7

Average Personal Income Tax Burdens with
Head of Household Exemptions and NTS Adjusted
for Family Size, by Family Type, 1988

| Total Income | <u>Tax Burden</u> | | | Head of Household |
|-------------------|-------------------|--------|-------|----------------------|
| | Total | Single | Joint | |
| Less than \$5,000 | 0.0 % | 0.0 % | 0.0 % | 0.0% |
| \$ 5,000- 9,999 | 0.1 | 0.2 | 0.0 | 0.0 |
| \$10,000-14,999 | 1.6 | 2.1 | 0.1 | 0.5 |
| \$15,000-19,999 | 2.5 | 3.2 | 0.8 | 2.0 |
| \$20,000-24,999 | 3.1 | 3.8 | 1.9 | 2.8 |
| \$25,000-29,999 | 3.4 | 3.9 | 2.6 | 3.5 |
| \$30,000-34,999 | 3.5 | 4.2 | 3.0 | 3.7 |
| \$35,000-39,999 | 3.8 | 4.2 | 3.5 | 4.0 |
| \$41,000-44,999 | 3.9 | 4.4 | 3.7 | 4.2 |
| \$45,000-49,999 | 4.1 | 4.6 | 3.9 | 4.1 |
| \$50,000-74,999 | 4.3 | 4.8 | 4.2 | 4.2 |
| \$75,000 and over | 4.7 | 4.9 | 4.7 | 6.0 |
| TOTAL | 2.7 % | 2.4 % | 3.2 % | 2.3 % |

Source: Massachusetts Income Tax Simulation Model with data from the March 1987 Current Population Survey.

Finally, Massachusetts should follow the lead of the federal government and index the NTS to inflation. NTS thresholds provide the major protection in the tax code for families at or near the poverty level from taxation as personal exemptions have ceased to serve that function. The increases of the NTS thresholds by the legislature in recent years could be attributed to abundant revenue collections. Sound tax policy suggests that the personal income taxation of those living below the poverty line should not be left to the vagaries of revenue yields. Since it is the NTS that protects those families in poverty from income taxation, the most efficient way is to adjust the base level for NTS to changes in the price level.

IV. TREATMENT OF WORK-RELATED DEPENDENT CARE EXPENSES

A. The Rise in the Number of Working Mothers

An important long term trend in family income composition is the movement away from a single "breadwinner" family to one in which both men and women work in the paid labor force. The increase in both number and percentage of all women, particularly mothers, who are wage earners has grown dramatically over the last two decades.³² A report commissioned by the Massachusetts Office for Children (OFC) estimates that in 1986 approximately 550,000 children under age 13 (60% of all children under 13) live in families where some work-related care is provided.³³ As more and more families depend on women's income for their economic survival, most of these families cannot fully participate in the work force without incurring some dependent care expenses.³⁴

Since 1974, the Massachusetts income tax code has recognized child care costs faced by working families in the form of a child care deduction. Massachusetts income tax filers may deduct work-related child care expenses for children under the age of 15 of up to \$2,400 for one child and \$4,800 for two or more children from

³² Labor force participation rates for all women in Massachusetts was 45.0% in 1970 and 59.2% in 1987. The U.S. labor force participation rate for women aged 25-34 was 45.0% in 1970 and in 1987 was 72.4%. The rate for women aged 35-44 was 51.1% in 1970 and 72.4% in 1987. (Bureau of Labor Statistics, Geographic Profile of Employment and Unemployment, 1987.)

³³ Caring for Our Common Wealth: The Economics of Child Care in Massachusetts, Office for Children, 1988.

³⁴ While the discussion here focuses on the costs associated with child care, there are other dependent care costs. Some parents of working people and some disabled adult children and siblings also require care. Women's entrance into the labor force has meant less available free care for family members regardless of the age of the dependent.

their AGI.³⁵ To claim this deduction, filers merely transfer their expenses calculated for their federal income tax form onto their state form. The Tax Expenditure Budget estimates the cost of the child care deduction to be \$10.6 million to the Commonwealth in FY89.³⁶ Reschovsky estimates that in 1988 nearly 240,000 filing units will be eligible for the child care deduction. One quarter of these families are heads of household.

The child care deduction recognizes child care expenses directly associated with earning income as costs not incurred by families without children or by families with children where a member provides unpaid services at home.³⁷ However, the current distribution of the benefit of the current deduction raises serious equity questions. Table 8 on the following page estimates the distribution of the current child care deduction from Reschovsky's Massachusetts Income Tax Simulation Model.³⁸

³⁵ Another tax expenditure for child care is allowed for parents who work for firms with Dependent Care Assistance Plans (DCAPs). Established DCAPs allow parents to set aside up to \$5000 of income to pay for child care before taxes and FICA are applied. The Office for Children report that the number of firms with DCAPs is currently small and the DCAPs tend to benefit high income families. The total FY89 cost of this tax expenditure is estimated to be \$1.0 million.

³⁶ Reschovsky estimates the total cost of the child care deduction in 1988 to be \$21.8 million. He assumes all eligible work-related expenses (as recorded in the Budget studies from which the estimates are derived) will be claimed. In fact, as noted by OFC, of children under 13 in non-parental, 40% are cared for by relatives while 13% are cared for in the home. Presumably, some of these families are unwilling to reveal payments on an income tax form.

³⁷ Although families with children under 12 who do not claim the work-related child care deductions are allowed an additional exemption of \$600. Mass. Gen. Laws. ch. 62, § 3B(a)(8).

³⁸ See also Appendix A.6 which reports data from DOR.

Table 8

Analysis of Child Care Expense Deduction by Income Class
Massachusetts Residents, 1988

| <u>Total Income</u> | <u>Average Child Care Deduction</u> | <u>Average Effective* Deduction</u> | <u>Average Tax Savings</u> | <u>Aggregate Tax Savings (in \$1000s)</u> | <u>Percent of Total Savings</u> |
|---------------------|---|---|--------------------------------|---|---|
| Less than \$5,000 | \$ 982 | \$ 0 | \$ 0 | \$ 0 | 0 % |
| \$ 5,000- 9,999 | 1,002 | 297 | 15 | 172 | 1 |
| \$10,000-14,999 | 1,192 | 866 | 43 | 304 | 1 |
| \$15,000-19,999 | 1,398 | 1,398 | 70 | 500 | 2 |
| \$20,000-24,999 | 1,285 | 1,285 | 64 | 1,354 | 6 |
| \$25,000-29,999 | 1,429 | 1,429 | 71 | 1,366 | 6 |
| \$30,000-34,999 | 1,494 | 1,494 | 75 | 1,808 | 8 |
| \$35,000-39,999 | 1,660 | 1,660 | 83 | 1,741 | 8 |
| \$40,000-44,999 | 1,683 | 1,683 | 84 | 1,762 | 8 |
| \$45,000-49,999 | 1,903 | 1,903 | 95 | 1,266 | 6 |
| \$50,000-74,999 | 2,082 | 2,082 | 104 | 4,670 | 21 |
| \$75,000 and over | 2,999 | 2,999 | 150 | 6,823 | 31 |
| TOTAL | \$1,881 | \$1,825 | \$ 91 | \$21,766 | 100 % |

* Effective deductions are deductions that directly result in lower tax liabilities.

Source: Massachusetts Income Tax Simulation Model with data from the March 1987 Current Population Survey

The child care deduction is disproportionately enjoyed by high income filers. In an analysis of tax savings received by income quintiles (based only on those filing tax returns) DOR estimates that in 1985, the top 10% of filers received 26.6% of the total benefit from the child care deduction. This is only slightly less than the 28.6% of benefit enjoyed by the bottom 60% of total filers. Several reasons exist for the skewed nature of this tax expenditure.

Many low-income families with child care expenses face low or no income tax liabilities on account of the NTS and LITRC. Therefore, the effective deductions for those claiming child care expenses is zero or very low. Reschovsky estimates that for filers with income between \$5,000 and \$9,999 the effective deduction is \$297. While these families are protected from income tax liabilities, they still incur child care costs.

A second reason for the skewed distribution is that low income families are simply priced out of the licensed child care market. Often they resort to the use of relatives or unlicensed child care. Since these child care providers may not report income from this source to the IRS or DOR, the families that use such services may not claim the deduction for fear of reprisals against the providers.

B. Option for Reform: A Refundable Dependent Care Tax Credit

While the Massachusetts tax preference is adopted from the federal Code, it is not structured like the federal deduction.³⁹ The percentage used to calculate the federal credit decreases as income increases. As such, the federal income tax credit for child care is distributed among families much more evenly. The vanishing deduction (or credit) would certainly be preferable. However, the federal system could be considered unconstitutional in Massachusetts because such a system results in income being taxed at non-uniform rates.⁴⁰

The Commonwealth has made a commitment to allowing families to deduct work-related child care costs from income. To ensure that all residents, particularly low and moderate income families, enjoy this tax expenditure, the deduction should be in the form of a refundable credit. Doing so would enhance vertical equity. By adjusting the credit to equal 5% of the current allowable deduction (a credit of \$120 for one child and \$240 for two children), many low and moderate income families who fall into the NTS or LITRC range could take full advantage of the deduction. Transforming the deduction to a credit will allow equal tax treatment for these families while maintaining the same

³⁹ For an excellent treatment of federal provisions for child care, including income tax treatment, see Philip K. Robins, "Federal Support for Child Care: Current Policies and a Proposed New System." Focus, Volume 11, No. 2, Summer 1988, pp. 1-9.

⁴⁰ Mass. Const. Amend. Art. 44.

level of benefit to high income families at the earned income tax rate.⁴¹

Reschovsky estimates that the additional cost associated with this proposal is \$19 million assuming a 100% participation rate. It is unlikely all eligible filers will participate in the program, so the costs are likely to be lower. Table 9 illustrates the impact of a refundable credit with full participation.

As Table 9 indicates, the expenditure will still benefit high income units more than low income families, although there is considerable redistribution to moderate income families.

Table 9

Analysis of the Replacement of the Child Care Expense Deduction
With a Refundable Child Care Credit
Massachusetts Residents, 1988

| Total Money Income | Average Child Care | Aggregate Child Care (\$000s) | % of Total |
|--------------------|-----------------------|-------------------------------------|---------------|
| Less than \$5,000 | \$ 180 | \$ 490 | 1 % |
| \$ 5,000- 9,999 | 165 | 1,922 | 5 |
| \$10,000-14,999 | 151 | 1,060 | 3 |
| \$15,000-19,999 | 120 | 859 | 2 |
| \$20,000-24,999 | 140 | 2,960 | 7 |
| \$25,000-29,999 | 169 | 3,240 | 8 |
| \$30,000-34,999 | 172 | 4,167 | 10 |
| \$35,000-39,999 | 197 | 4,127 | 10 |
| \$40,000-44,999 | 172 | 3,602 | 9 |
| \$45,000-49,999 | 180 | 2,398 | 6 |
| \$50,000-74,999 | 173 | 7,699 | 19 |
| \$75,000 and over | 192 | 8,717 | 21 |
| TOTAL | \$ 173 | \$ 41,234 | 100 % |

Source: Massachusetts Income Tax Simulation Model with data from the March 1987 Current Population Survey.

⁴¹ Three states have refundable credit: New Mexico, Minnesota and Alaska. Twenty-one states have adopted some form of the federal tax deduction or credit. Alaska has a refundable credit even though it does not have an income tax.

Many low-income families which do not claim the current deduction might still not take a refundable credit for fear that recording their expenses would cause the loss of unlicensed and/or "under the table" dependent care. For these families, the solution is more affordable dependent care, not better tax treatment. Finally, since work-related dependent care costs are not only associated with children under 15, the credit should be extended to filing units with dependents regardless of age.

V. CONCLUSION

The Massachusetts personal income tax code advances a policy of tax equity for families through its personal and dependent exemptions, NTS, and child care deduction provisions. However, the Legislature should follow the lead of the federal government and reform these provisions to more accurately reflect this policy. First, the personal exemption should be increased from the current \$2,200 to \$3,400 for single taxpayers with dependents, i.e., "heads of household." Second, the NTS should be adjusted for family size so that "no-tax" status is identical for families of the same size and should be indexed to the inflation rate. Finally, a refundable dependent care tax credit should replace the current child care deduction.

Appendix A
SUPPLEMENTARY TABLES

Table A.1

Filing Units Eligible for Limited Income Tax Reduction Credit
By Filing Status, Adjusted Gross Income and Total Income

Number of Eligible Filing Units and (Percent Eligible)
of Total Filing Units Facing Positive Income Tax Liabilities

| Adjusted Gross Income | <u>Filing Status</u> | | | | | |
|-----------------------|----------------------|-------|--------|------|-------------------|------|
| | Single | | Joint | | Head of Household | |
| Less than \$5,000 | 0 | (0) | 0 | (0) | 0 | (0) |
| \$ 5,000- 9,999 | 66,810 | (100) | 0 | (0) | 9,530 | (88) |
| \$10,000-14,999 | 102,030 | (54) | 38,430 | (95) | 4,710 | (18) |
| \$15,000-19,999 | 0 | (0) | 22,850 | (44) | 0 | (0) |
| \$20,000-24,999 | 0 | (0) | 1,950 | (3) | 0 | (0) |
| TOTAL | 168,840 | (28) | 63.220 | (38) | 14,240 | (16) |
| <u>Total Income</u> | | | | | | |
| Less than \$5,000 | 0 | (0) | 0 | (0) | 0 | (0) |
| \$ 5,000- 9,999 | 45,080 | (100) | 0 | (0) | 5,490 | (81) |
| \$10,000-14,999 | 86,940 | (60) | 12,130 | (91) | 4,890 | (21) |
| \$15,000-19,999 | 26,540 | (14) | 11,590 | (40) | 2,870 | (17) |
| \$20,000 and over | 10,270 | (2) | 39,520 | (4) | 1,010 | (1) |
| TOTAL | 168,840 | (28) | 63,220 | (38) | 14,240 | (16) |

Source: Massachusetts Income Tax Simulation Model with data from the
March 1987 Current Population Survey.

Table A.2

"No Tax" Status and the Weighted Average Poverty Level Thresholds
For One person and Families of Three and Four, 1971-1986

| Year | <u>NTS</u> | | <u>Poverty Threshold</u> | | |
|------|-----------------|----------------|-------------------------------|-------------------------------|------------------------------|
| | Single Filer | Joint Filer | Single Person Household | Family of Three Persons | Family of Four Persons |
| 1971 | \$3,000 | 5,000 | \$2,000 | \$3,229 | \$4,137 |
| 1972 | 3,000 | 5,000 | 2,109 | 3,339 | 4,275 |
| 1973 | 3,000 | 5,000 | 2,259 | 3,689 | 4,540 |
| 1974 | 3,000 | 5,000 | 2,495 | 3,963 | 5,038 |
| 1975 | 3,000 | 5,000 | 2,724 | 4,293 | 5,500 |
| 1976 | 3,000 | 5,000 | 2,884 | 4,540 | 5,815 |
| 1977 | 3,000 | 5,000 | 3,075 | 4,833 | 6,191 |
| 1978 | 3,000 | 5,000 | 3,375 | 5,233 | 6,662 |
| 1979 | 3,000 | 5,000 | 3,689 | 5,784 | 7,412 |
| 1980 | 3,000 | 5,000 | 4,190 | 6,565 | 8,414 |
| 1981 | 3,000 | 5,000 | 4,620 | 7,250 | 9,287 |
| 1982 | 3,000 | 5,000 | 4,901 | 7,693 | 9,962 |
| 1983 | 3,000 | 5,000 | 5,061 | 7,938 | 10,178 |
| 1984 | 3,600 | 6,100 | 5,278 | 8,277 | 10,609 |
| 1985 | 4,400 | 7,200 | 5,469 | 8,573 | 10,989 |
| 1986 | 6,000 | 10,000 | 5,572 | 8,737 | 11,203 |
| 1987 | 6,000 | 10,000 | 5,778 | 9,056 | 11,611 |

Source: U.S. Department of Commerce, Census Bureau.

Table A.3

Federal Tax Exempt Levels
Pre and Post 1986 Federal Tax Reform Act

| <u>Year</u> | <u>Joint</u> | | | <u>Head of Household</u> | |
|-------------|--------------|-----------|-----------|--------------------------|-----------|
| | 0 depdnts | 2 depdnts | 4 depdnts | 2 depdnts | 4 depdnts |
| 1984 | \$ 5,400 | \$ 7,400 | \$ 9,400 | \$ 5,300 | \$ 7,300 |
| 1986 | 5,820 | 7,980 | 10,140 | 5,720 | 7,800 |
| 1988 | 8,900 | 12,800 | 16,700 | 10,250 | 14,150 |
| 1990 | 9,500 | 13,600 | 17,700 | 10,900 | 15,000 |

Source: Eugene Steuerle, Paul Wilson. "The Taxation of Poor and Lower Income Workers," Clearinghouse Review, Vol. 21, No. 99, February 1988.

Table A.4

Impact of the Proposal to Adjust No Tax Status
for Family Size Analysis By Income Class
Massachusetts Residents, 1988

Number of Filing Units

| | <u>Eligible for No Tax Status</u> | <u>Increase From Current Law</u> | <u>% Increase</u> |
|------------------------------|---------------------------------------|--------------------------------------|-----------------------|
| <u>Adjusted Gross Income</u> | | | |
| Less than \$5,000 | 534,010 | 0 | 0 % |
| \$ 5,000- 9,999 | 193,230 | 10,820 | 6 |
| \$10,000-14,999 | 33,710 | 19,760 | 142 |
| TOTAL | 760,950 | 30,580 | 4 |
| <u>Total Income</u> | | | |
| Less than \$5,000 | 164,090 | 0 | 0 % |
| \$ 5,000- 9,999 | 323,330 | 6,760 | 2 |
| \$10,000-14,999 | 149,780 | 17,870 | 14 |
| \$15,000-19,999 | 66,460 | 3,910 | 6 |
| \$20,000 and cver | 57,300 | 3,040 | 6 |
| TOTAL | 760,950 | 30,580 | 4 % |

Source: Massachusetts Income Tax Simulation Model with data from the March 1987 Current Population Survey.

Table 1

Summary of the results of the experiments conducted on the effect of the concentration of the solution on the rate of reaction.

| Concentration of solution (M) | Rate of reaction (mol/l.s) | Concentration of solution (M) | Rate of reaction (mol/l.s) | Concentration of solution (M) | Rate of reaction (mol/l.s) |
|-------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|
| 0.1 | 0.001 | 0.2 | 0.002 | 0.3 | 0.003 |
| 0.4 | 0.004 | 0.5 | 0.005 | 0.6 | 0.006 |

The results show that the rate of reaction increases with the concentration of the solution. The rate of reaction is directly proportional to the concentration of the solution.

Table 2

Summary of the results of the experiments conducted on the effect of the temperature on the rate of reaction.

| Temperature (°C) | Rate of reaction (mol/l.s) | Temperature (°C) | Rate of reaction (mol/l.s) | Temperature (°C) | Rate of reaction (mol/l.s) |
|------------------|----------------------------|------------------|----------------------------|------------------|----------------------------|
| 20 | 0.001 | 30 | 0.002 | 40 | 0.003 |
| 50 | 0.004 | 60 | 0.005 | 70 | 0.006 |

The results show that the rate of reaction increases with the temperature. The rate of reaction is directly proportional to the temperature.

Table A.5

Impact of the Proposal to Adjust the
Limited Income Tax Reduction Credit (LITRC) for Family Size

Analysis By Income Class
Massachusetts Residents, 1988

| | <u>Number of Filing Units</u> | | |
|------------------------------|-------------------------------|--------------------------------------|-----------------------|
| | <u>Eligible for LITRC</u> | <u>Increase from Current Law</u> | <u>% Increase</u> |
| <u>Adjusted Gross Income</u> | | | |
| Less than \$5,000 | 0 | 0 | 0 % |
| \$ 5,000- 9,999 | 66,810 | -9,530 | -12 |
| \$10,000-14,999 | 148,770 | 3,600 | 2 |
| \$15,000-19,999 | 40,620 | 17,760 | 78 |
| \$20,000-24,999 | 3,180 | 1,230 | 63 |
| TOTAL | 259,370 | 13,060 | 5 % |
| <u>Total Income</u> | | | |
| Less than \$5,000 | 0 | 0 | 0 |
| \$ 5,000- 9,999 | 45,080 | -5,470 | -11 |
| \$10,000-14,999 | 104,630 | 660 | 1 |
| \$15,000-19,999 | 55,210 | 14,220 | 35 |
| \$20,000 and over | 54,460 | 3,650 | 7 |
| TOTAL | 259,370 | 13,060 | 5 % |

Source: Massachusetts Income Tax Simulation Model with data from the
March 1987 Current Population Survey.

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

LABORATORY OF PHYSICAL CHEMISTRY

REPORT OF THE RESEARCH

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THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

LABORATORY OF PHYSICAL CHEMISTRY

REPORT OF THE RESEARCH

Table A.6

Massachusetts Child Care Deductions
Analysis By Income Group, 1985

| Average Income (AGI) Group | Number of | | Total | |
|-------------------------------|-----------|----------------|-------------------|-------------------|
| | Filers | % Distribution | Amount (\$000) | Amount (\$000) |
| Less than \$5,000 | 1,349 | 1.29 % | \$ 900 | \$ 687 |
| \$ 5,000- 9,999 | 5,391 | 5.17 | 6,975 | 1,294 |
| \$10,000-14,999 | 9,634 | 9.24 | 15,315 | 1,590 |
| \$15,000-19,999 | 9,967 | 9.56 | 17,174 | 1,723 |
| \$20,000-29,999 | 19,503 | 18.71 | 34,336 | 1,761 |
| \$30,000-49,999 | 34,720 | 33.31 | 64,980 | 1,872 |
| \$50,000-99,999 | 20,395 | 19.57 | 44,703 | 2,192 |
| \$100,000 or grtr | 3,270 | 3.14 | 8,252 | 2,523 |
| TOTAL | 104,229 | 100.00 % | \$192,635 | \$1,848 |

Source: Massachusetts Department of Revenue, 1985 Preliminary Data
Parts may not sum to totals because of rounding.

